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This guide is suitable for users of the ASP Specialist Series aluminium beams. For erection of the roof with Generation 450mm beams, see the dedicated user guide.

INTRODUCTION

1. Introduction

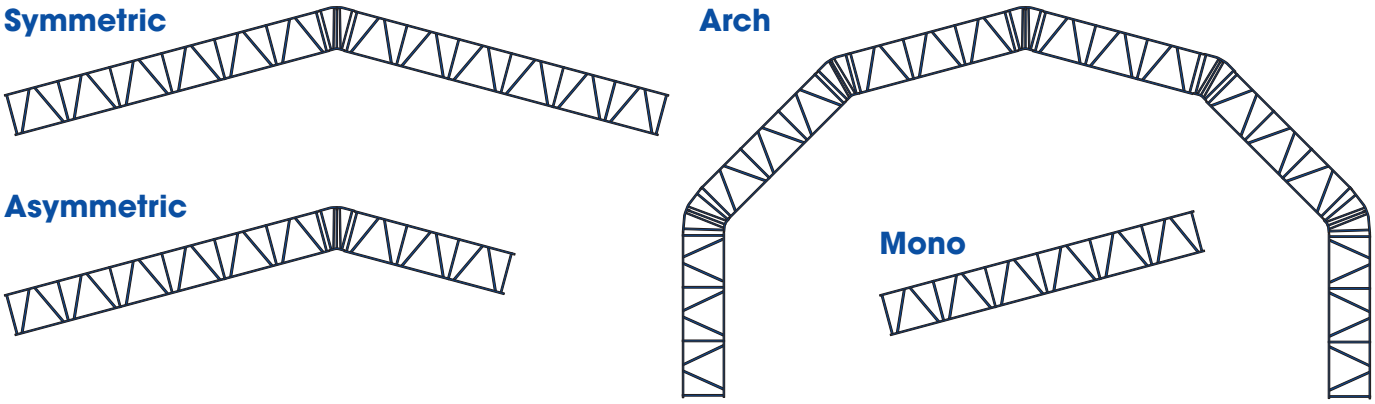
UBIX is a modular all-aluminium temporary roofing and weather-proofing system using the slide sheet or "keder" principle which allows the roof covering to be installed in complete safety from underneath. UBIX can be built safer and faster than many existing roofing systems. Using an exclusive and revolutionary sliding button system to retain the sheet tracking, UBIX uses custom-designed ASP Specialist Series aluminium beams to maximise performance.

2. Choosing the Span Type

UBIX is suitable for symmetric or asymmetric duo pitch spans, arch and mono pitch spans using either the 78cm or 45cm deep beams. The following table provides a typical range of suitability for the various span types excluding any special measures:

Beam Size	Duo Pitch		Mono Pitch[2]	Arch[3]
	Symmetric	Asymmetric[1]		
78cm	36m	32m	19m	44m

1 Asymmetric roof assumes one side slope 50% longer than other side slope.
2 Mono pitch span assumes a minimum angle of 15 degrees.
3 Uses 3 or 5 no ridge beams.



3. Erection Methods

UBIX can be erected by a variety of methods:

- In situ scaffold supported with a perimeter platform.

  (It is considered that this method is suitable for spans up to 15m only).

If the assembled trusses are too heavy to handle, alternate methods should be utilised:

- Erection by crane
- Erection from central tower
- Rolling trusses.

4. Compliances

There is no current British Standard for modular temporary roofing systems. The NASC is drafting a Technical Guidance Note TG9 for Temporary Roofing at the time of going to print and this should be consulted for guidance.

The notes which follow have been prepared for the guidance of those concerned with the erection of the system and therefore do not form a part of any contract.
The UBIX Roofing System is designed on the basis of a series of simply supported beams. It is the contractor's responsibility to provide a suitable support structure.
It is also the contractors responsibility to meet the requirements of the Health & Safety at Work Act, statutory regulations and relevant codes of practice.
ASP wish to maintain the most effective methods at all times and therefore reserve the right to amend the following pages without prior notice.

5. Delivery and Storage

It is the responsibility of the contractor to unload the components and check for any damage. Before assembly, ensure all items are undamaged and fit for purpose. Any damaged items should be segregated and replacements requested.
Components may be stored in the open, but the area should be secure and care taken to keep them clean.

6. Safety Considerations

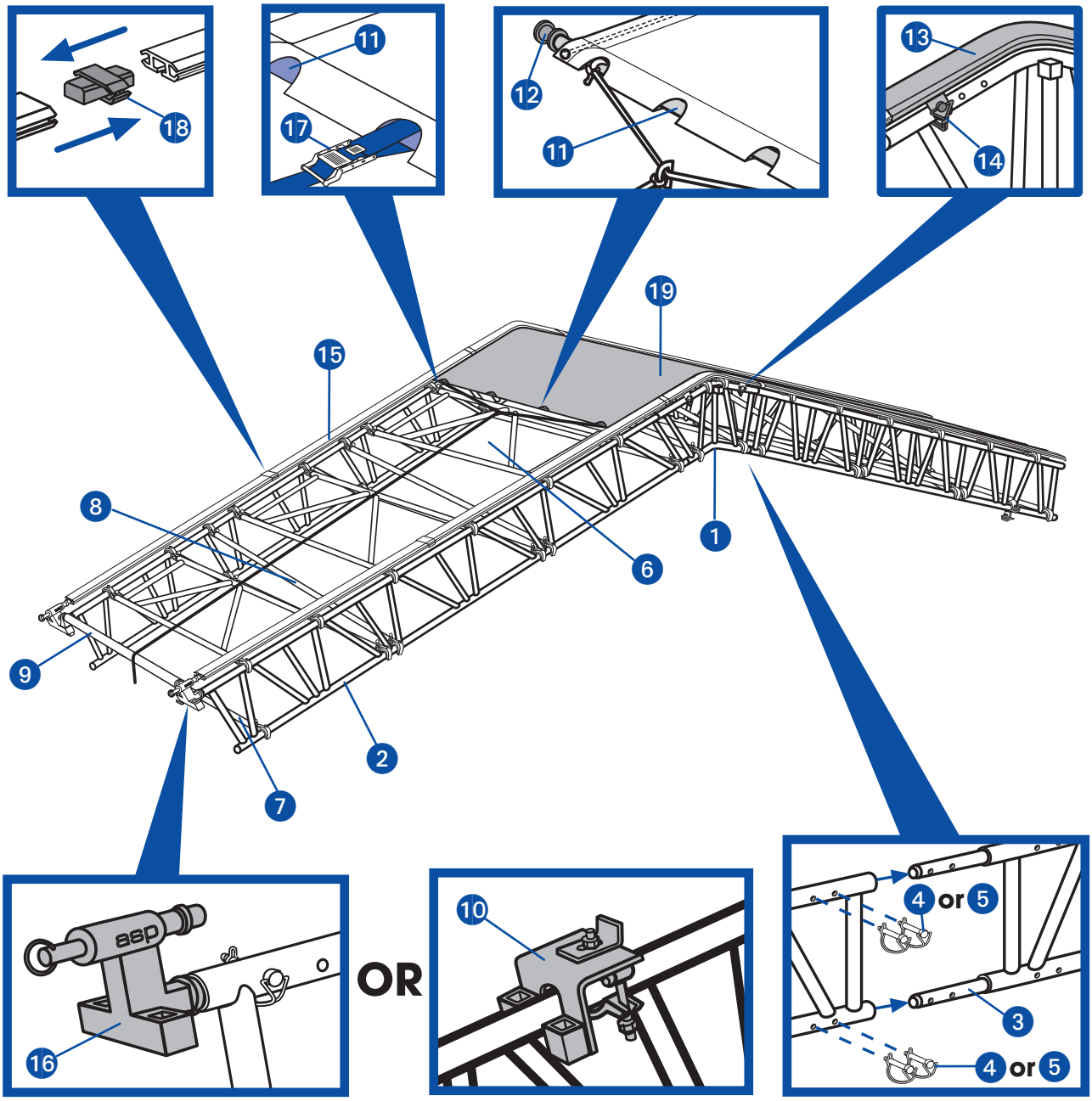
Adopt a safe system of work at all times. Plan the safe system prior to commencement of the job, ensuring that it is specific to the particular application and method of assembly. Ensure that all erecting personnel are adequately trained in the assembly of UBIX, erection training and/or erection supervision is available from ASP if required.
Adopt suitable protective measures to ensure against falls from height.

7. Preparation

We recommend that at least four persons will be required to erect the UBIX System.
All roofing projects should be designed by a competent engineer and the drawing must be present on site for guidance.
It is recommended that the supervisor should check that the following are satisfactory before commencing roof erection:

1. Visual check of scaffold.
2. Ledger or beam and inside standard support detail.
3. Safe means of access to level of works where roof is to be installed.
4. Sufficieant means of protection and safe system of work at level where roof is to be installed. (i.e. fully boarded and guardrailed to inside and outside face or some other means of fall arrest system in place).
5. If a crane is to be used, check site is suitable for setting up and there are no overhead power lines or obstructions.
6. The general alignment of the supporting scaffolds and any level differences. (Note that if the scaffold splays or the front and back supporting scaffold is not parallel, the levels will differ and adjustments will need to be made to the supporting scaffold structure to ensure the roof sits level).

8. Component Recognition



1. Ridge Beam
2. 78cm Beams
3. Beam Spigot
4. Quick Release Pin
5. M12 x 60 Special Bolt and Nut
6. "K" Frame
7. Horizontal Brace
8. Diagonal Brace
9. Roller Brace
10. Intermediate Roller Brace Coupler
11. Sheet Tension Tube
12. Sheet Pulling Bar (for installation only)
13. Ridge Track
14. Ridge Track Securing Pin
15. Sheet Track
16. Eaves Track Stop
17. Ratchet Strap (tensioning after installation)
18. Tracking Spigot
19. Roof Sheet

COMPONENTS

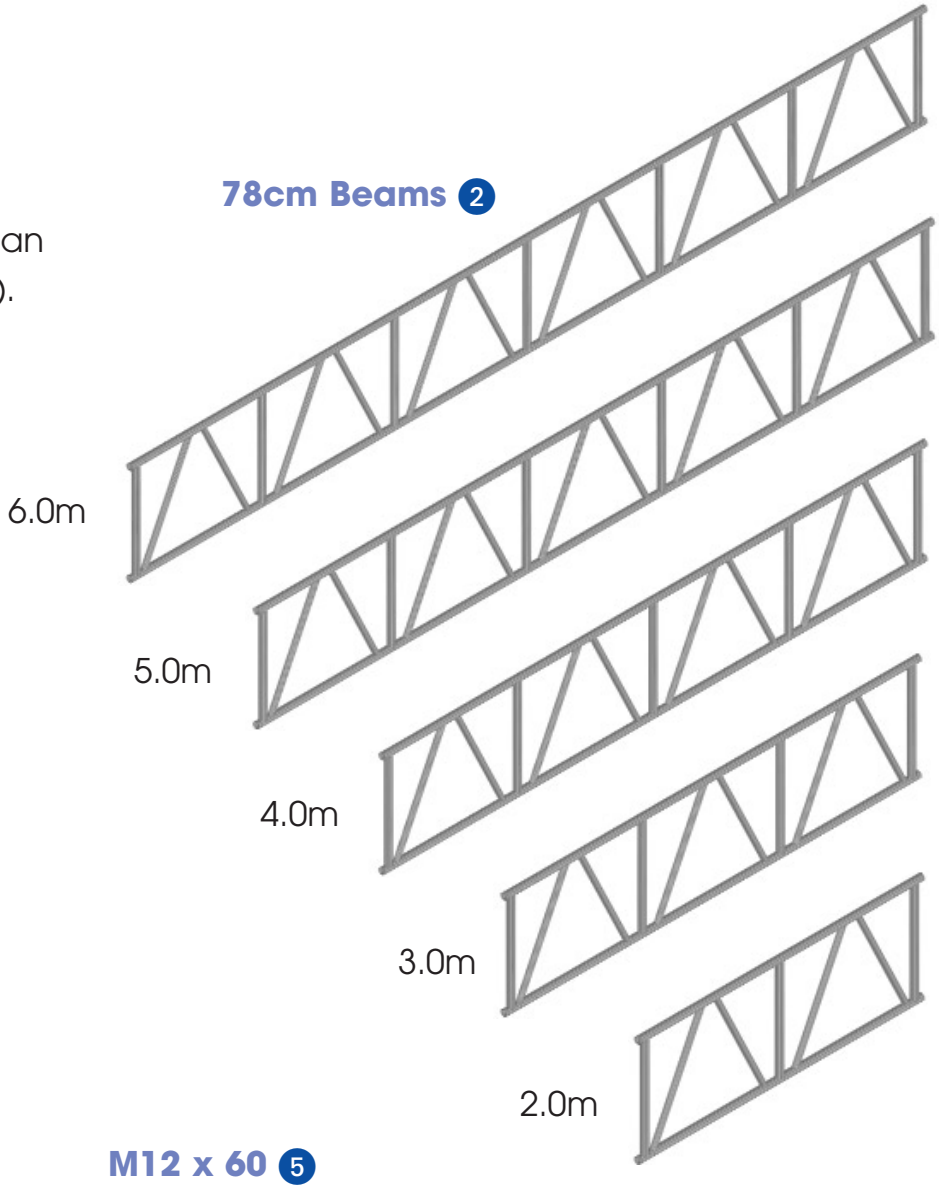
Ridge Beam 1

18° x 78cm

Is formed at 18 degrees to provide the roof pitch.

(2 ridge beams together can also be used at the eaves).

78cm Beams 2



Beam Spigot 3

Aluminium tube with 4 no. through bolt holes to connect the top and bottom chords of beams.

Quick Release Pin 4

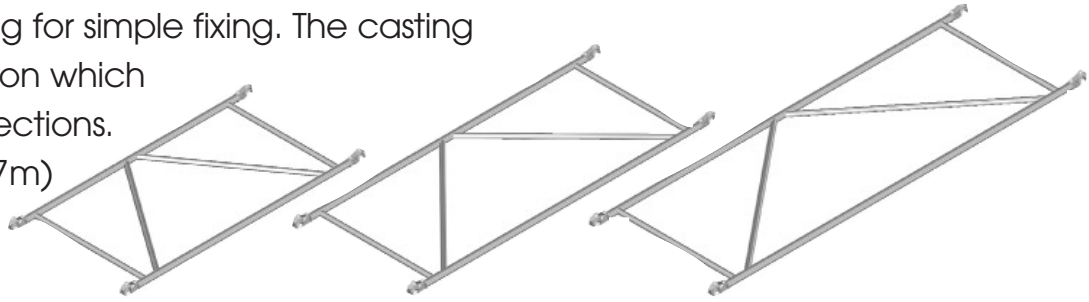
Used to secure Beam Spigots to next beam.

M12 x 60 5
Special Bolt and Lock Nut

Used to fix spigot into beam.

"K" Frame 6

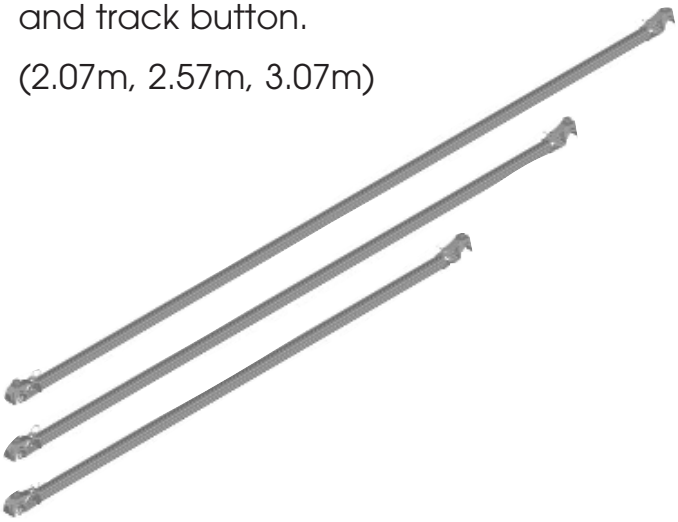
Brace frame which connects the top members of pairs of trusses. The ends have a special claw casting for simple fixing. The casting includes a top button which secures the track sections. (2.07m, 2.57m, 3.07m)



Horizontal Brace 7

Provides horizontal restraint between top or bottom members of adjacent trusses. Ends include the claw casting and track button.

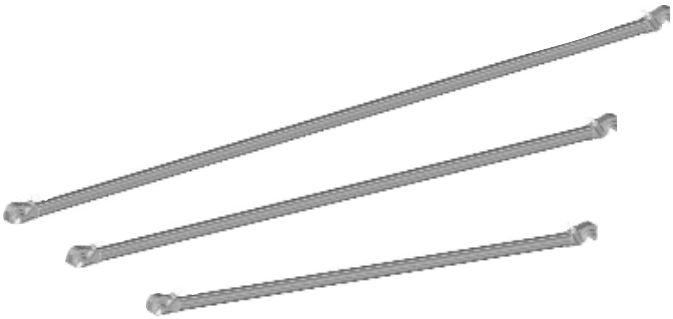
(2.07m, 2.57m, 3.07m)



Diagonal Brace 8

Provides diagonal bracing between top and bottom members of adjacent beam trusses. It is similar to, but longer than, the horizontal brace. There is no button on the end casting.

(2.07m, 2.57m, 3.07m x 78cm)



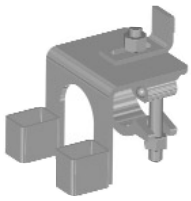
Roller Brace 9

Links adjacent trusses at eaves and ridge, roller action aids sheet installation and tensioning.

(2.07m, 2.57m, 3.07m)

Intermediate Roller Brace Coupler 10

Special coupler for terminating sheeting at intermediate positions.



Sheet Tension Tube 11

Slides through pockets in the ends of the sheeting to enable tensioning and fixing.

(2.07m, 2.57m, 3.07m)

Sheet Pulling Bar 12

Inserted through Tension Tube, nylon rollers guide the leading edge of the sheet smoothly over the roof; simply removed once sheet is installed, specify 1 per roof.

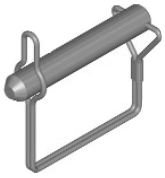
(Adjustable 2.07m > 3.07m)

Ridge Track 13

Provides the guide track and support for the roof sheeting at the ridge position.

Ridge Track Securing Pin 14

Quick release pin secures track to ridge beam.



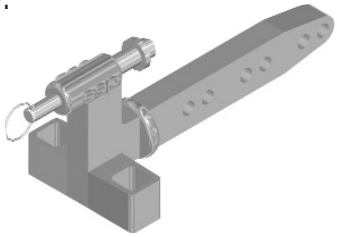
Sheet Track 15

Provides the guide track and support for the sheeting.

(2.0m, 3.0m)

Eaves Track Stop 16

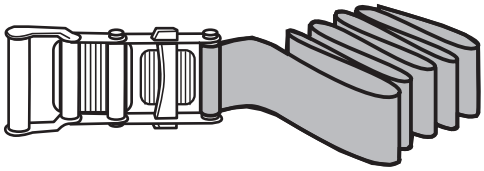
Positioned at the eaves to tension the sheeting track and connect the roller brace.



Ratchet Strap 17

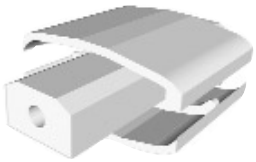
Secures and tensions the roof sheeting to the structure at the eaves.

(Max length 50cm)



Tracking Spigot 18

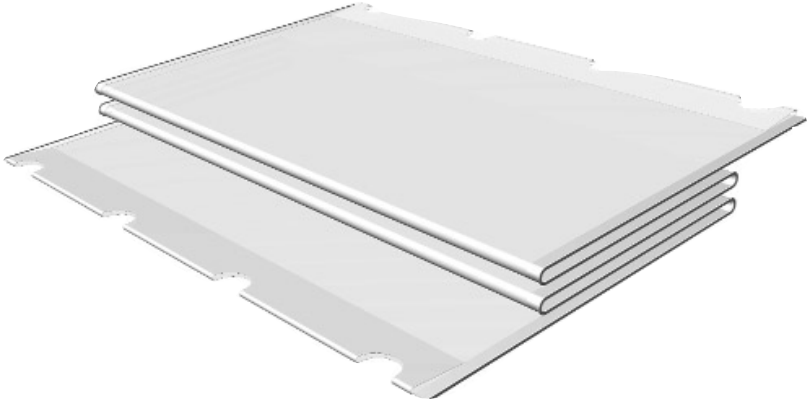
Joins and seals successive lengths of tracking.



Roof Sheet 19

Manufactured from high grade, flame retardent PVC, polyester coated fabric. Semi-translucent sheets are located in the tracking and pulled into position across the roof.

(2.07m, 2.57m, 3.07m wide)



PARTS LIST

Generation Code	ASP Part No:	Description	Weight
Beams			
440001	16031878	(UBIX) Aluminium ridge beam 18 deg x 0.78m	9.8kg
440004	20990001	(UNBS) Unit beam SS Alloy 0.78 x 0.5m	4.1kg
440005	20990002	(UNBS) Unit beam SS Alloy 0.78 x 1.0m	6.1kg
440006	20002000	(UBNS) Unit beam SS Alloy 0.78 x 2.0m	11.0kg
440007	20003000	(UNBS) Unit beam SS Alloy 0.78 x 3.0m	16.7kg
440008	20004000	(UNBS) Unit beam SS Alloy 0.78 x 4.0m	22.0kg
440009	20005000	(UNBS) Unit beam SS Alloy 0.78 x 5.0m	27.4kg
440010	20006000	(UNBS) Unit beam SS Alloy 0.78 x 6.0m	32.7kg
440011	20070001	(UNBS) Beam spigot SS Alloy	0.8kg
Braces			
440017	16052072	(UBIX) 'K' frame 2.07m	11.7kg
440018	16052572	(UBIX) 'K' frame 2.57m	14.5kg
440019	16053072	(UBIX) 'K' frame 3.07m	17.3kg
440020	16062072	(UBIX) Horizontal brace 2.07m	3.9kg
440021	16062572	(UBIX) Horizontal brace 2.57m	4.6kg
440022	16063072	(UBIX) Horizontal brace 3.07m	5.3kg
440023	16072072	(UBIX) Diagonal brace 0.73 x 2.07m	3.9kg
440024	16072572	(UBIX) Diagonal brace 0.73 x 2.57m	4.6kg
440025	16073072	(UBIX) Diagonal brace 0.73 x 3.07m	5.3kg
440029	16092072	(UBIX) Roller brace 2.07m	10.0kg
440030	16092572	(UBIX) Roller brace 2.57m	12.0kg
440031	16093072	(UBIX) Roller brace 3.07m	14.0kg
Track			
440033	16110018	(UBIX) Ridge track 18 deg x 1.3m	2.8kg
440034	30091270	(SAAC) Quick release pin M12 x 70 for ridge tracks	0.1kg
440035	16122000	(UBIX) Sheet track 2.0m	3.6kg
440036	16123000	(UBIX) Sheet track 3.0m	5.5kg
440037	16220000	(UBIX) Rubber spigot Mk III	0.03kg
Fasteners			
440013	30081263	(SAAC) Special bolt with Center Lok nut M12 x 60	0.1kg
440014	30081263-02	(SAAC) Center Lok nut M12 (spare part)	0.02kg
440015	30091260	(SAAC) Quick release pin M12 x 60	0.1kg

Parts List continued

Generation Code	ASP Part No:	Description	Weight
Accessories			
440038	16152072	(UBIX) Sheet tensioning bar 2.07m	8.3kg
440039	16152572	(UBIX) Sheet tensioning bar 2.57m	10.5kg
440040	16153072	(UBIX) Sheet tensioning bar 3.07m	12.7kg
440041	16163250	(UBIX) Sheet pulling bar	7.8kg
440042	16170000	(UBIX) Track stop-eaves	1.1kg
440043	16170001	(UBIX) Intermediate roller brace coupler	3.3kg
440045	16240002	(UBIX) Ratchet straps	0.5kg
Sheeting			
440047	16350100	(UBIX) Sheet 10.00 x 2.07m	12.4kg
440048	16350150	(UBIX) Sheet 15.00 x 2.07m	18.6kg
440049	16350200	(UBIX) Sheet 20.00 x 2.07m	24.8kg
440050	16350250	(UBIX) Sheet 25.00 x 2.07m	31.1kg
440051	16350300	(UBIX) Sheet 30.00 x 2.07m	37.3kg
440052	16350350	(UBIX) Sheet 35.00 x 2.07m	43.5kg
440053	16350400	(UBIX) Sheet 40.00 x 2.07m	49.7kg
440054	16350045	(UBIX) Sheet 45.00 x 2.07m	55.9kg
440055	16360100	(UBIX) Sheet 10.00 x 2.57m	15.4kg
440056	16360150	(UBIX) Sheet 15.00 x 2.57m	23.1kg
440057	16360200	(UBIX) Sheet 20.00 x 2.57m	30.8kg
440058	16360250	(UBIX) Sheet 25.00 x 2.57m	38.6kg
440059	16360300	(UBIX) Sheet 30.00 x 2.57m	46.3kg
440060	16360350	(UBIX) Sheet 35.00 x 2.57m	54.0kg
440061	16360400	(UBIX) Sheet 40.00 x 2.57m	61.7kg
440062	16360045	(UBIX) Sheet 45.00 x 2.57m	69.4kg
440063	16370100	(UBIX) Sheet 10.00 x 3.07m	18.4kg
440064	16370150	(UBIX) Sheet 15.00 x 3.07m	27.6kg
440065	16370200	(UBIX) Sheet 20.00 x 3.07m	36.8kg
440066	16370250	(UBIX) Sheet 25.00 x 3.07m	46.1kg
440067	16370300	(UBIX) Sheet 30.00 x 3.07m	55.3kg
440068	16370350	(UBIX) Sheet 35.00 x 3.07m	64.5kg
440069	16370400	(UBIX) Sheet 40.00 x 3.07m	73.7kg
440070	16370045	(UBIX) Sheet 45.00 x 3.07m	82.9kg

9. Erection Procedure

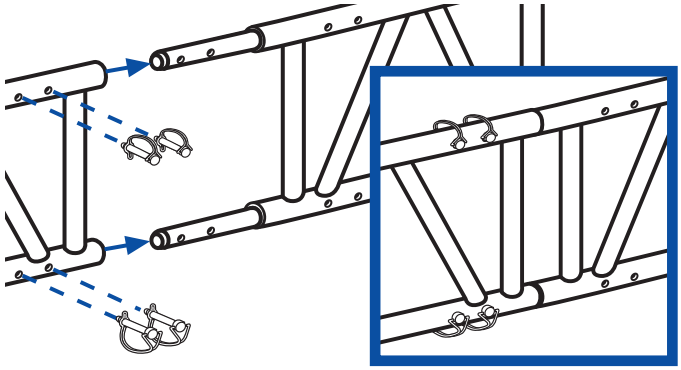
Note: The UBIX roof components for assembly should be selected in accordance with the engineer's design that will have been produced for the project. This user guide covers the principal components, but the details of any knee bracing, tension wires, spine beams or any similar special requirements should be sought from the engineer's design drawing.

9.1 Assembling Trusses

Construct trusses on the ground if practicable, to limit working at height. Take the appropriate lengths of pre-spigoted beams and connect together with the special fasteners. All beams should be connected together using either ASP quick release pins or ASP special bolts and nuts or a combination of the two fixing types in accordance with the following diagrams.

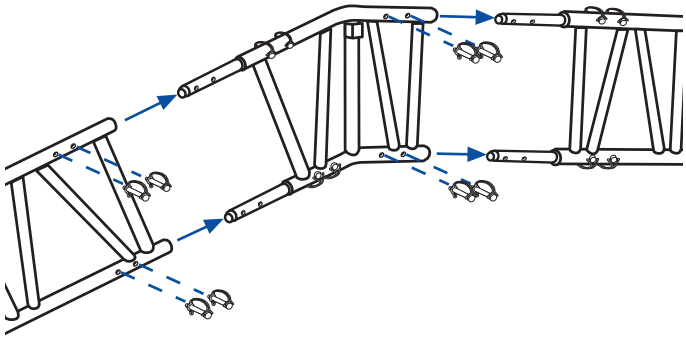
Connect beams together using 2 spigots (Pt 20070001) and either:

1 8 x quick release pins (Pt 30091260)
2 8 x special nut and bolt (Pt 30081263)
3 LHS 4 x 30091260 and RHS 4x 30081263



Completed connection

Note orientation of end diagonals in each beam.



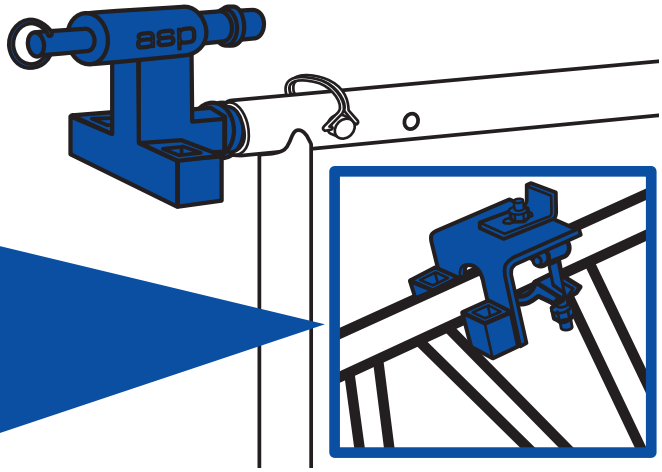
9.2 Assembling Ridges

Add ridge beam to end of beam in the centre by sliding onto spigots.

Also secure with quick release pins.

9.3 Track Stops

Insert eaves track stops into the open end of the top chord of each beam and secure with one quick release pin.

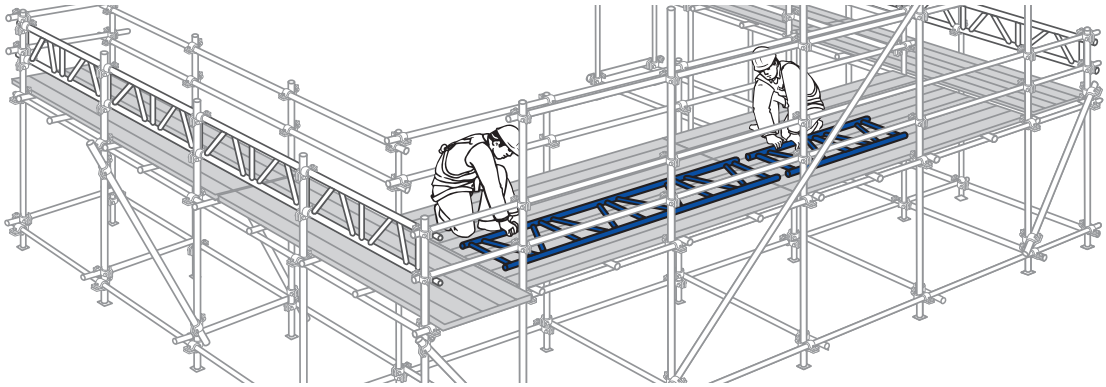


Note: If truss protrudes more than 1.0m outside the scaffold support, consider the use of the intermediate Roller Brace Coupler. (See para 15).

10. Erection in situ (Spans up to 15m)

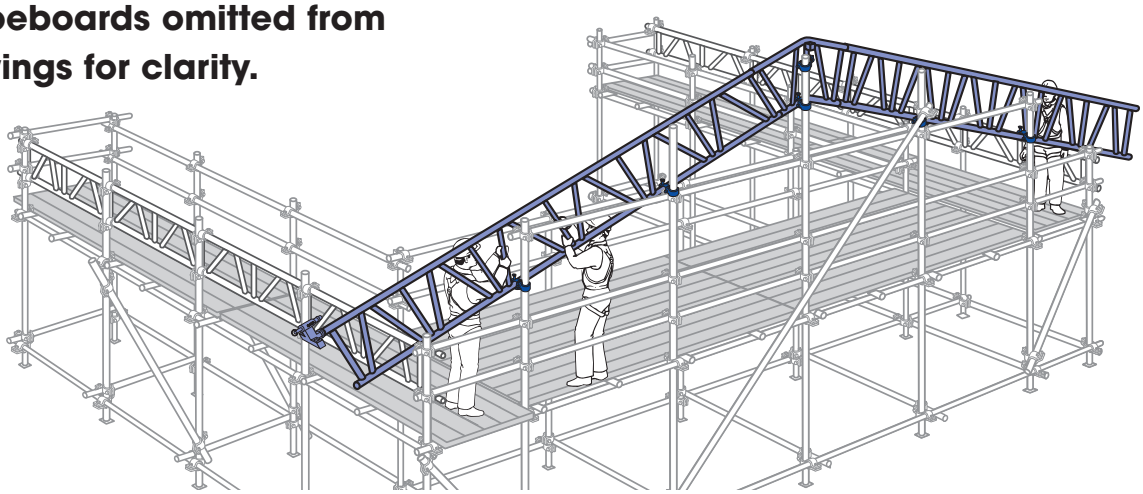
10.1 Working Platform

Where practicable, increase the available working area by enlarging the platform width at the gable end nearest to the unloading position to provide a minimum 3 metre wide area upon which to assemble and rest completed beam lines.



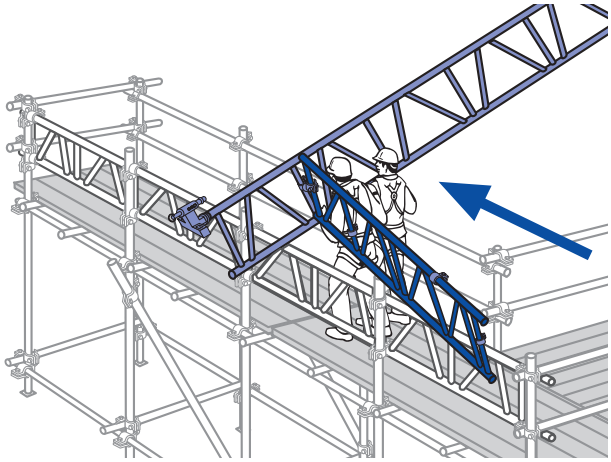
Alternatively extend the outer standards of the gable end scaffold to provide a support for the first truss while it is being assembled.

NOTE: Toeboards omitted from all drawings for clarity.

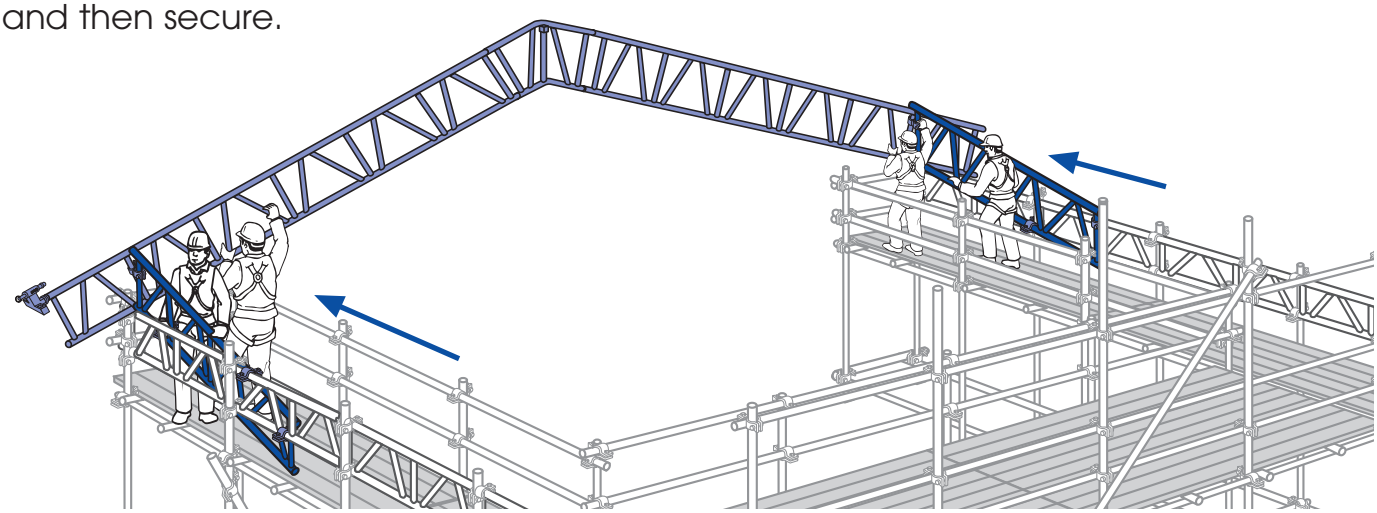


10.2 First Truss

Single assembled trusses can usually be manually lifted by operatives from the extended working platform or from the temporary assembly position on the gable end. Attach a double coupler to one side of the complete truss in exactly the same position each time (i.e. against a vertical or diagonal). This will ensure when landing the truss that it sits at right angles to the support. Walk the beam to the far gable end along the scaffold top lift, restraining the apex against overturning with a safety line.



On the opposite side, fix a double coupler to the support, leaving the gate open to receive the truss. Raise truss into final position, drop the previously fitted double coupler over the support and secure to support scaffold, using a temporary brace to prevent overturning. Allow the opposite side to slide through the coupler gate and then secure.

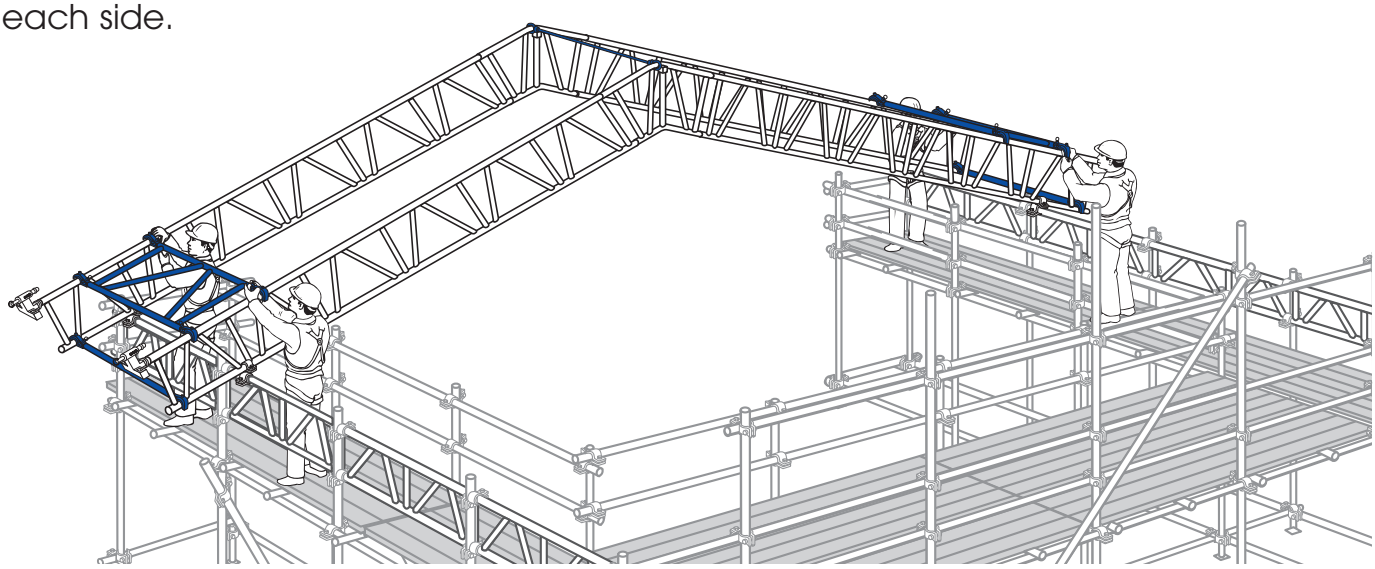


10.3 Second Truss

Construct next truss in the same way, walk into position and support.

10.4 Bracing the First Bay

Attach two "K" frames to the first truss, one either side, fitting the snap-on claws into the space between the first pair of diagonals of the beam. Hold the K-frame just over the 2nd truss and move the truss so that when the claws are engaged, they are in exaclty the same position against the diagonals as the 1st truss. (Continue this procedure for all trusses). To ensure correct beam alignment, pull the claws back and down so they butt against the diagonals. The knee of the frame is mounted towards the apex as shown. Operatives should now pull the truss out under control until spacing permits attachment of both "K" frame claws on each side.



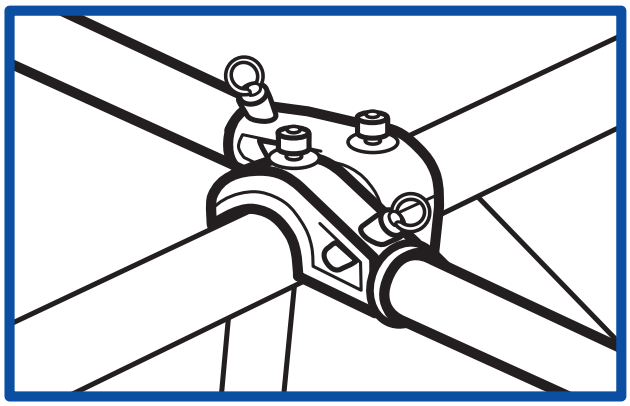
Fit the first diagonal brace on each side and the first horizontal brace (claws between first upright and diagonal) to the lower chord.

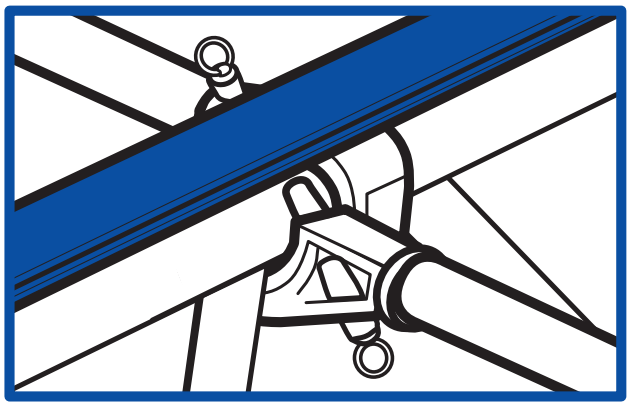
Secure the second truss to the support scaffold with load-bearing couplers.

Note 1: All braces are connected by push fit. Ensure that the braces are held at 90 degrees to the beam line prior to installation. Following installation ensure that the steel securing pin is fully extended so that the ring pull is in contact with the claw.

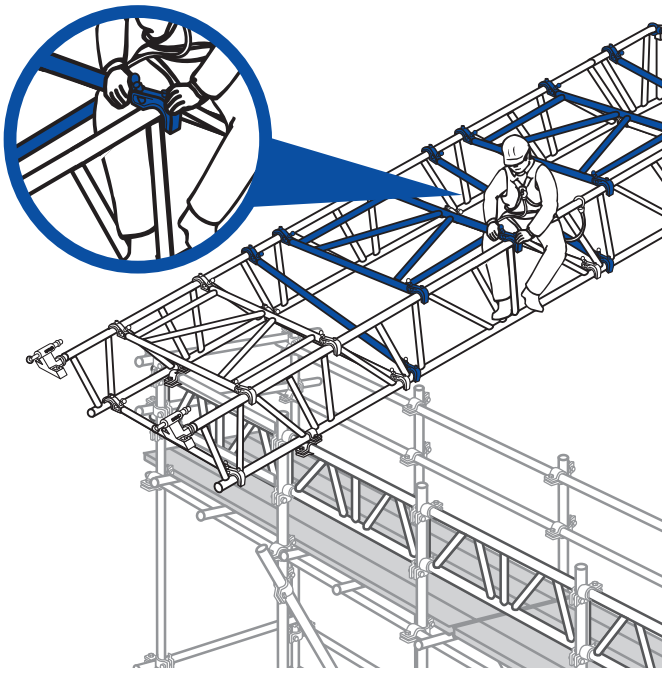
NOTE FAILURE OF THIS PIN TO ENGAGE IS A CLEAR INDICATION THAT THE BRACE IS NOT SQUARE TO THE BEAM AND SHOULD BE REALIGNED.

Note 2: Braces should be installed to the beam chords with the button nuts facing upwards to receive the sheet tracking. Where braces are required to link pre-sheeted bays these can be fitted to the underside of the top chord with the button nuts facing downwards. This also applies if access to the intermediate bay is required at a later date, enabling future removal without disturbing the tracking.



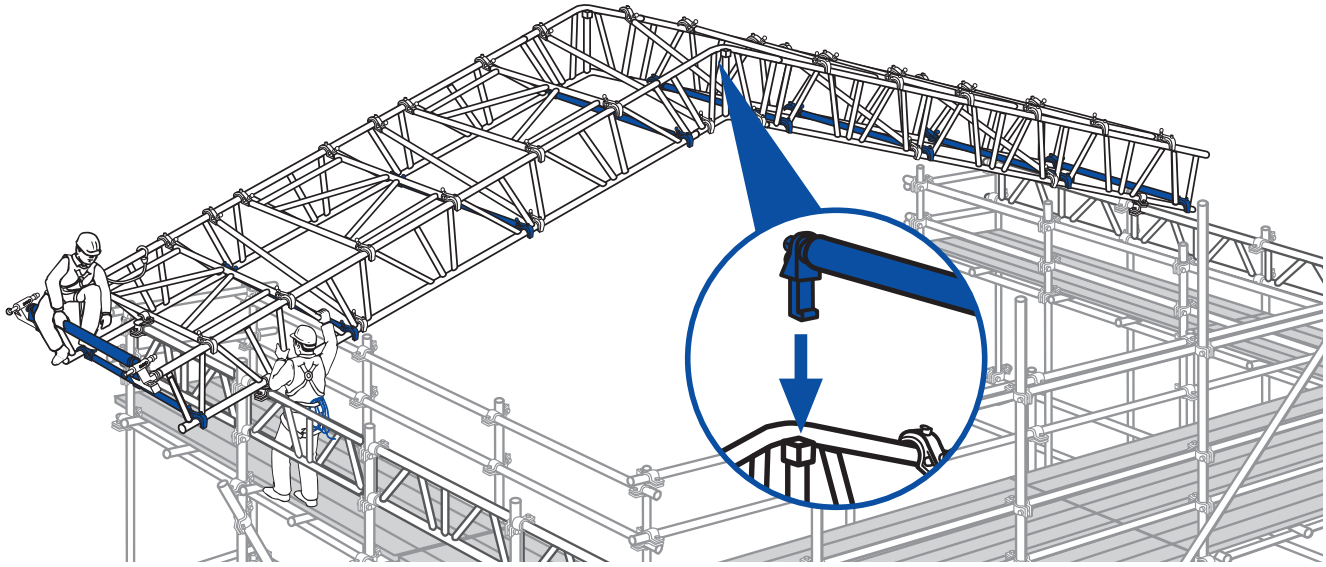


An operative should ascend the beam lower chord. Attach the next K-frame, normally at 1.0m frequency. Attach diagonal braces from top to bottom chords, fitting the lower claw between the upright and diagonal upslope from each K-frame. Diagonal brace spacing is normally 2.0m centres.



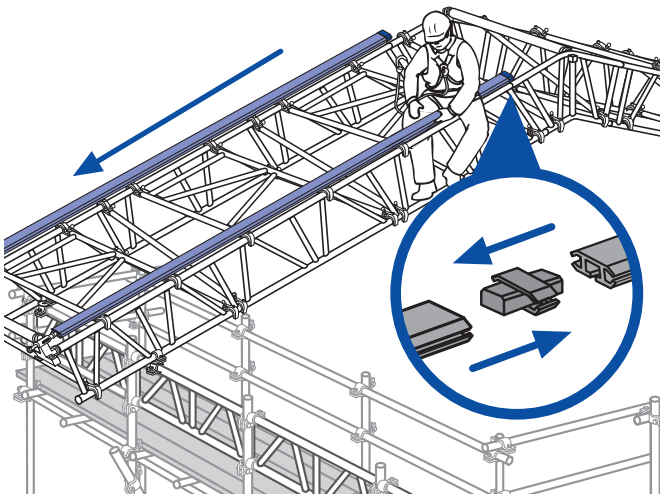
Roller braces are fitted into the pockets of the ridge beam and of the track stops at the eaves. Install horizontal brace to bottom chord between upright and diagonal starting at the eaves and spacing usually at 2.0m centres,

Note: At this point it is recommended that the operatives take with them the sheet pulling ropes. (Attach the rope to belt).



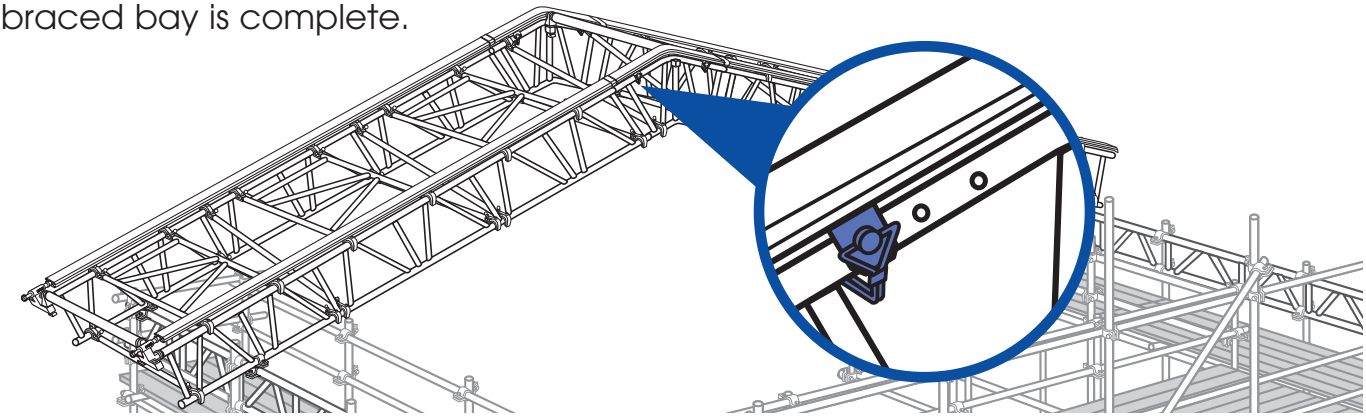
10.5 Tracking

While fitting braces, the operatives should also assemble the track sections.



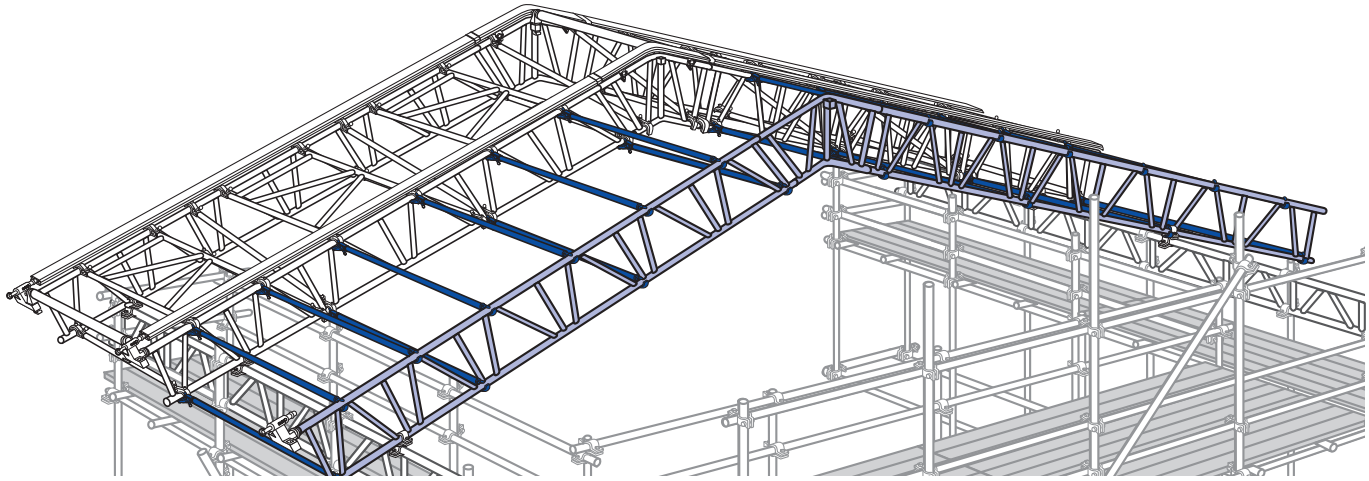
Start from the ridge, sliding the track section down slope over the buttons built-in to each claw until it abuts the tracking stop. To extend the track, insert a rubber tracking spigot and push the next track section into place. The ridge tracks are secured last using special quick release pins.

Continue to secure "K" frames and braces as per the design drawing until the first braced bay is complete.



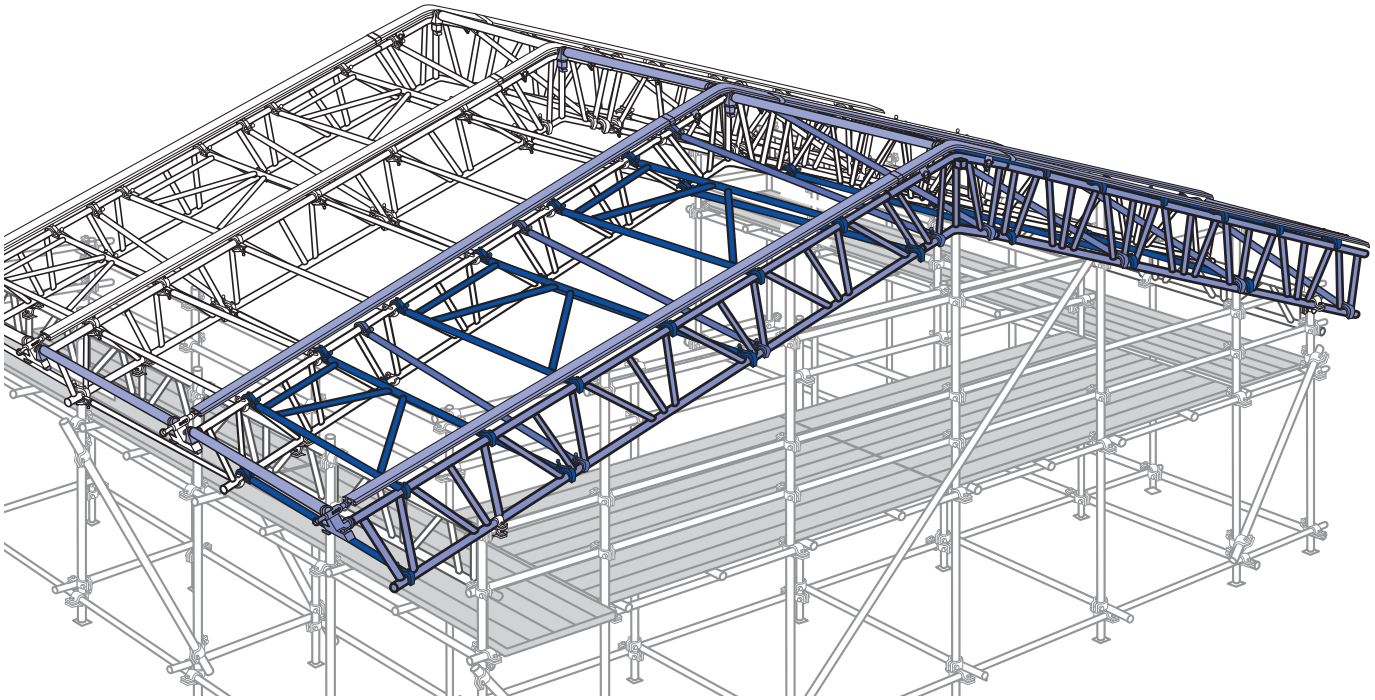
10.6 Erecting Further Bays

Once the first fully braced bay has been completed, assemble next truss as before, walk into position and attach to the already erected bay with swivel couplers. Attach horizontal braces to the new truss, release the swivel couplers and pull out the new truss until the claws can be connected to the previously erected bay. Secure the new truss to the support scaffold with load-bearing couplers.



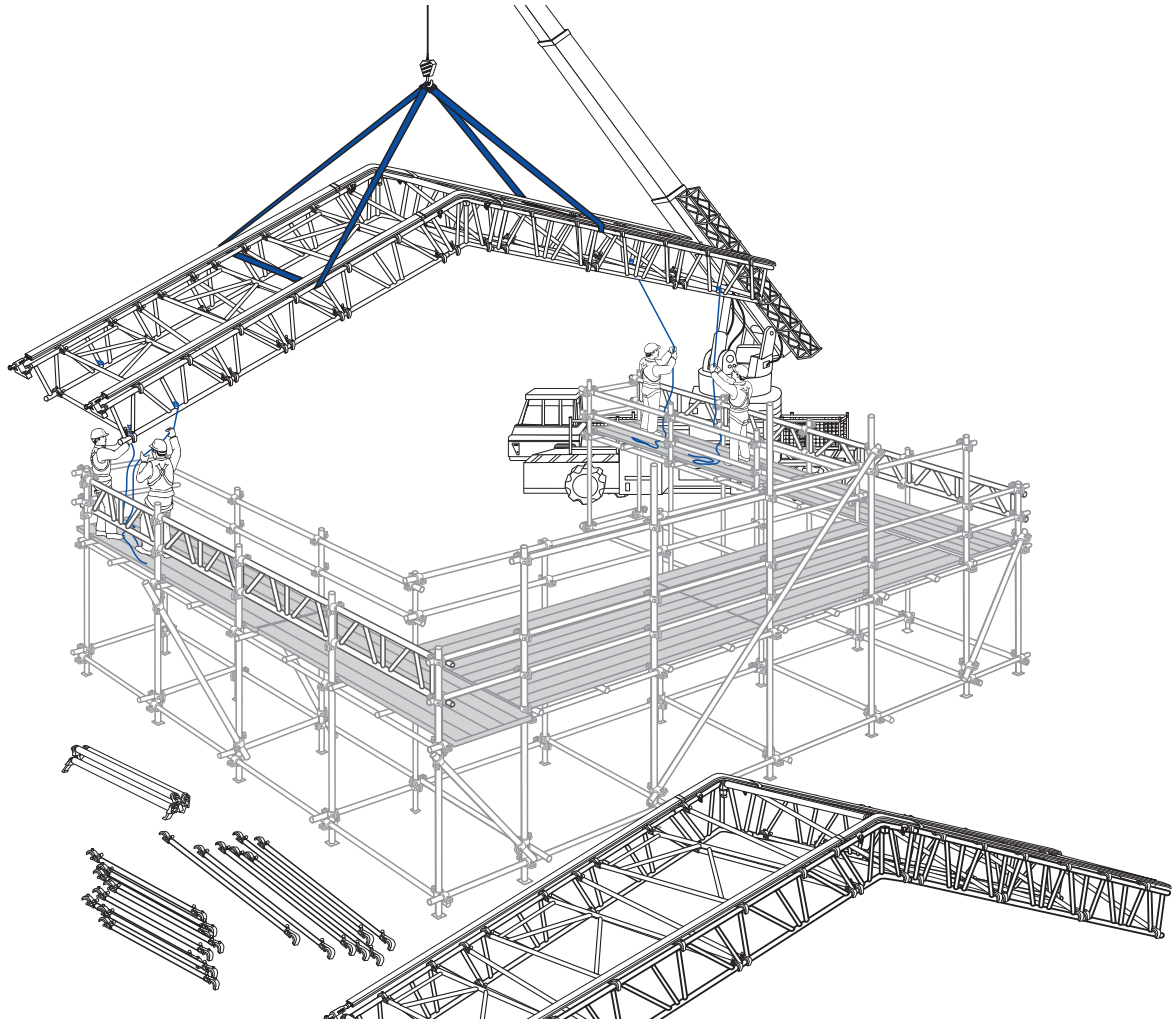
Continue to erect further bays in a similar manner until the roof structure is complete. Refer to the design drawing for horizontal and diagonal bracing nodal frequency, which is usually 1.0m spacing on the upper chord and 2.0m spacing on the lower chord. Fully-braced bays are normally required every fifth bay. As each truss is completed, secure to the support scaffold.

Note: Ensure that the end bay is fully braced. In some cases this may result in the final two bays being fully braced.



11. Crane Erection

UBIX can be safely built by being assembled in sections on the ground and then craning them into position.
This will reduce the work to be conducted at height, but consideration will still be required for suitable access, temporary bracing and slinging.



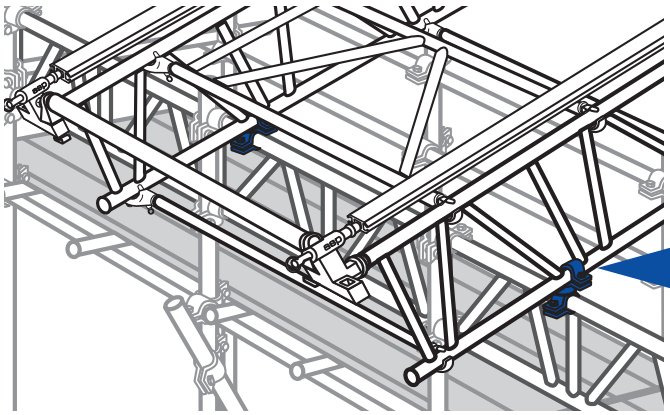
11.1 Assembling Braced Bays

It is important to fully brace each of the bays to be lifted, but infill bays only require horizontal braces to connect to the complete crane lifted bays.

If craning into position, temporarily attach infill single braces to K-frames in order to reduce the amount of work to be carried out at height. These can be released and clipped into position to infill the bays once the complete bays have been lifted into position.

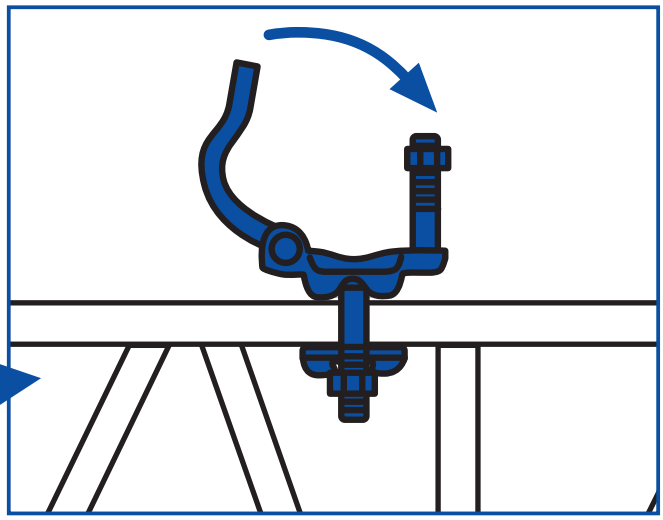
Before lifting the completed bays into position, take the sheet pulling rope over the bay. This will eliminate the need to climb over the roof once the bay is in position. The sheeting can then be installed from the boarded level thus reducing the need to work at height.

Attach a double coupler to one side of the complete truss in exactly the same position. (i.e. against a vertical post or diagonal). This will ensure that when landing the bay it sits at right angles to the supporting ledger or beam.



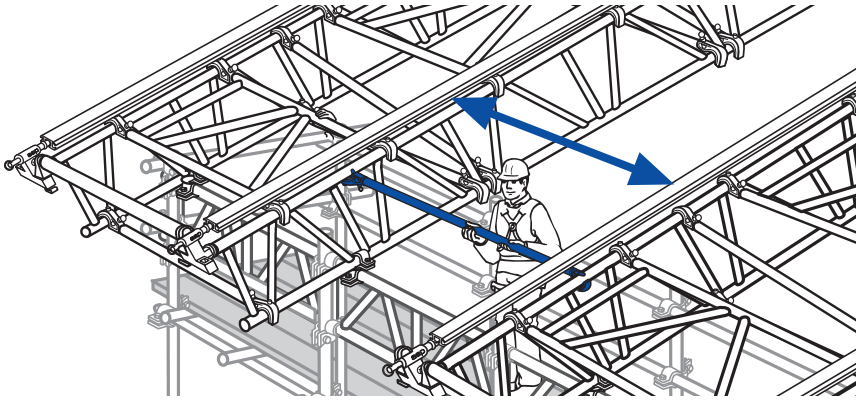
Couplers positioned in the same place against each truss.

Fit the opposite side double couplers directly onto the ledger or beam and only secure the gate to the ledger/beam. Allow the truss to locate into the gate and slide through until it finds its position.



Coupler attached to opposite side support beam. Gate open to receive truss.

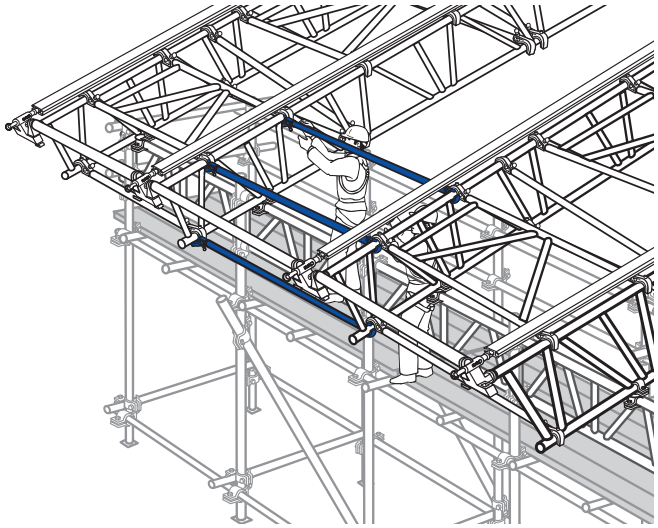
To assist with the correct dimensional spacing of the braced bays, use a single horizontal brace attached to the previously fixed bay. Hold the bay to be lowered into position approximately 50mm above the supporting ledger or beam.



Once satisfied the alignment is correct, lower the bay into position and fix one side with the doubles first attached to the truss and secure.

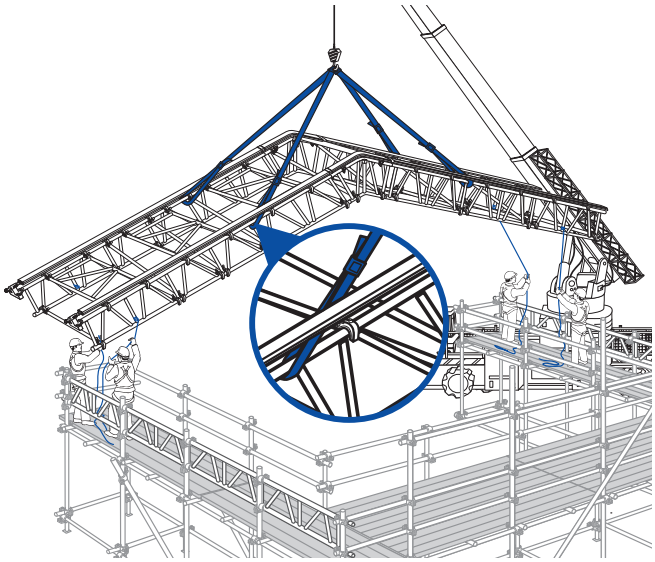
Adopt the same procedure for the opposite side, lower and allow the truss to slide through the gates on double and secure.

With alternate fully-braced roof bays in position, the bays between can be infilled. Horizontal braces are fitted upside down beneath the adjacent top beam members. This avoids interference with the sheeting tracking. The Horizontal braces are positioned similarly to the top member and those on the adjacent complete beams but offset to sit outside rather than between the beam diagonals to avoid interference.



11.2 Slinging

The sling positions should be determined by a competent design engineer. A complete bay should be lifted from a minimum of 4 slinging points, all at node positions and adjacent to the bracing frames. Straps, not chains, must be used and care taken not to damage the sheeting tracks.



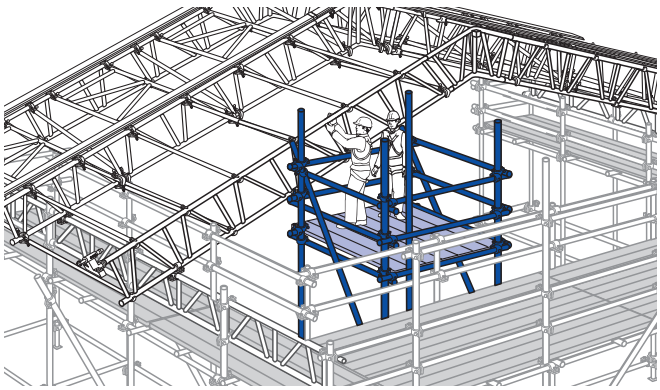
11.3 Lifting

The crane lifting of roofing sections that have already been sheeted could be adversely affected by wind conditions, and so should be carefully considered, closely supervised, and imminent weather information obtained.

Do not attempt crane lifting unless conditions are suitable.

12. Erection from Central Tower

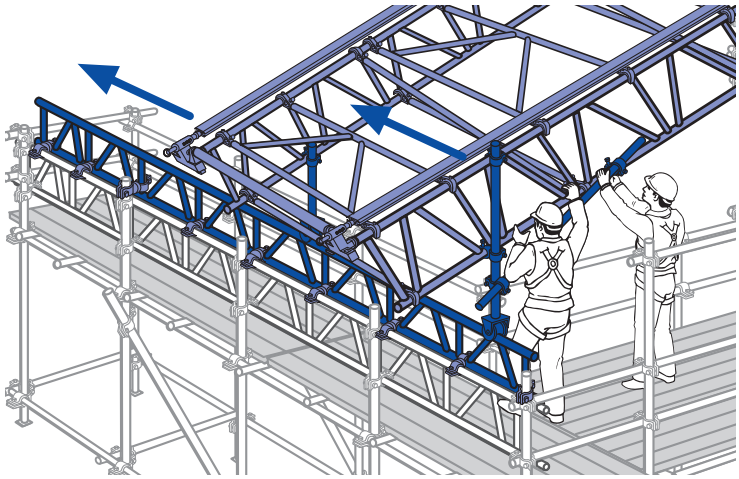
A central tower can be constructed from scaffolding if circumstances allow to act as temporary support for truss assembly. This central working platform can receive beam sections for final assembly into complete trusses and be used to secure them to the support scaffold.



Imposed loads on the tower and underlying structure should be assessed by a competent engineer and a suitable design provided prior to starting work.

13. Rolling Trusses

This method requires a running beam along each support scaffold and specialised roof castors (available from ASP). Roof trusses are assembled from a suitable working platform at the loading end and rolled out progressively, with each bay being constructed and rolled out in turn.



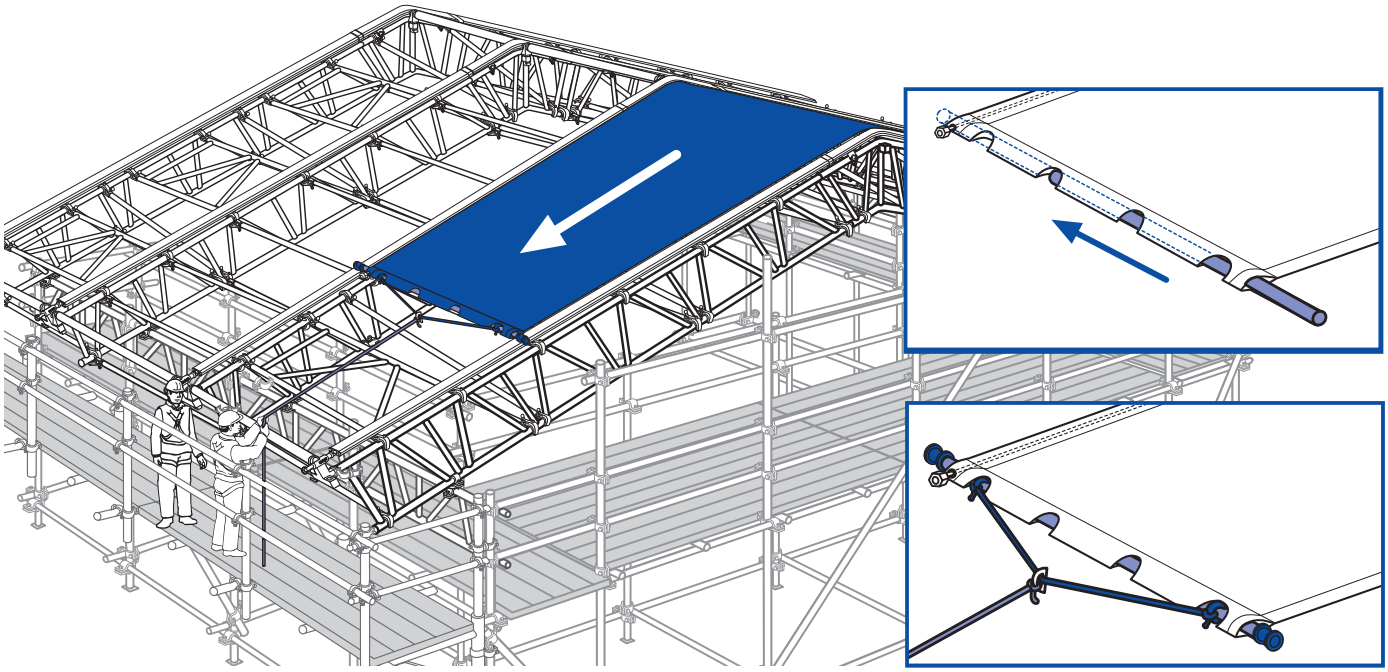
Imposed loads on the support scaffold during rolling operations should be assessed by a competent engineer and a suitable design provided prior to starting work.

14. Sheeting

The prevailing weather conditions may determine whether it is safe to commence the sheeting operation, as the sheets will be vulnerable to high winds. Sheeting is ideally carried out by four operatives, two on each side of the roof. Safe working platforms must be provided or built-in to the support scaffold for these operatives.

Ensure sheets are leaf folded, clean and fit for use. Visually check the keder bead for cuts/damage. **DO NOT USE** if damaged. Place sheeting on boarded lift directly below bay.

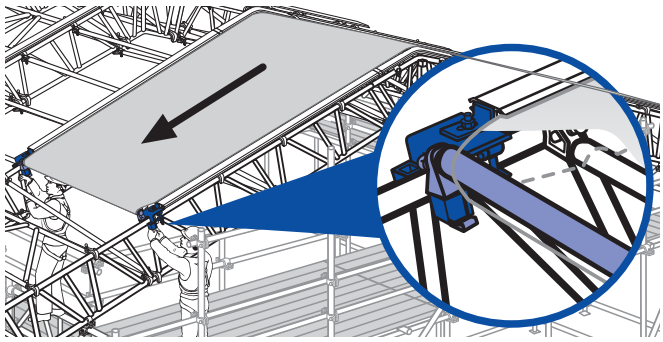
Insert Sheet Tension Tube into hem on leading edge of sheet and at the exposed outer front pockets secure the two pulling harnesses. Attach the previously deployed pulling rope to the D-ring of the pulling harness.



Remove one roller from the Sheet Pulling Bar and insert the bar through the tube, then refit the roller to secure. Position the rollers over the tracking each side. Insert sheet beading into tracking up to 1.5m in depth, to ensure correct alignment, running the rollers over the top surface of the tracking.
Gradually and evenly pull the ropes to slide the sheeting across the roof within the tracking. When fully sheeted, fit another Sheet Tension Tube into the trailing edge hem and secure these tubes to scaffold ledgers on either side, one side with couplers and the other side using 2 x ratchet straps.

15. Eaves Termination

Use the intermediate roller brace coupler to terminate sheeting at any point.

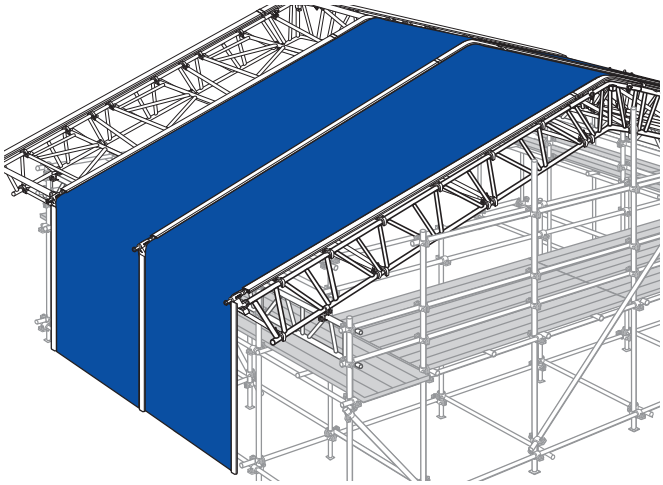


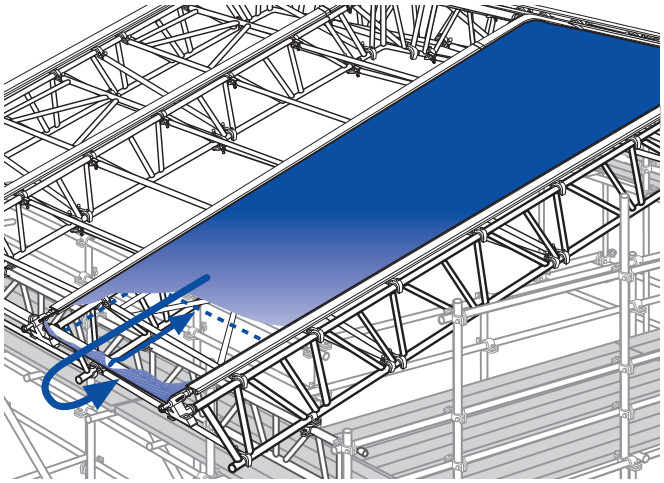
15.1 Excess Sheeting

There are two recommended methods of dealing with excess sheeting:

Pull excess sheeting down the outside face of the scaffold.

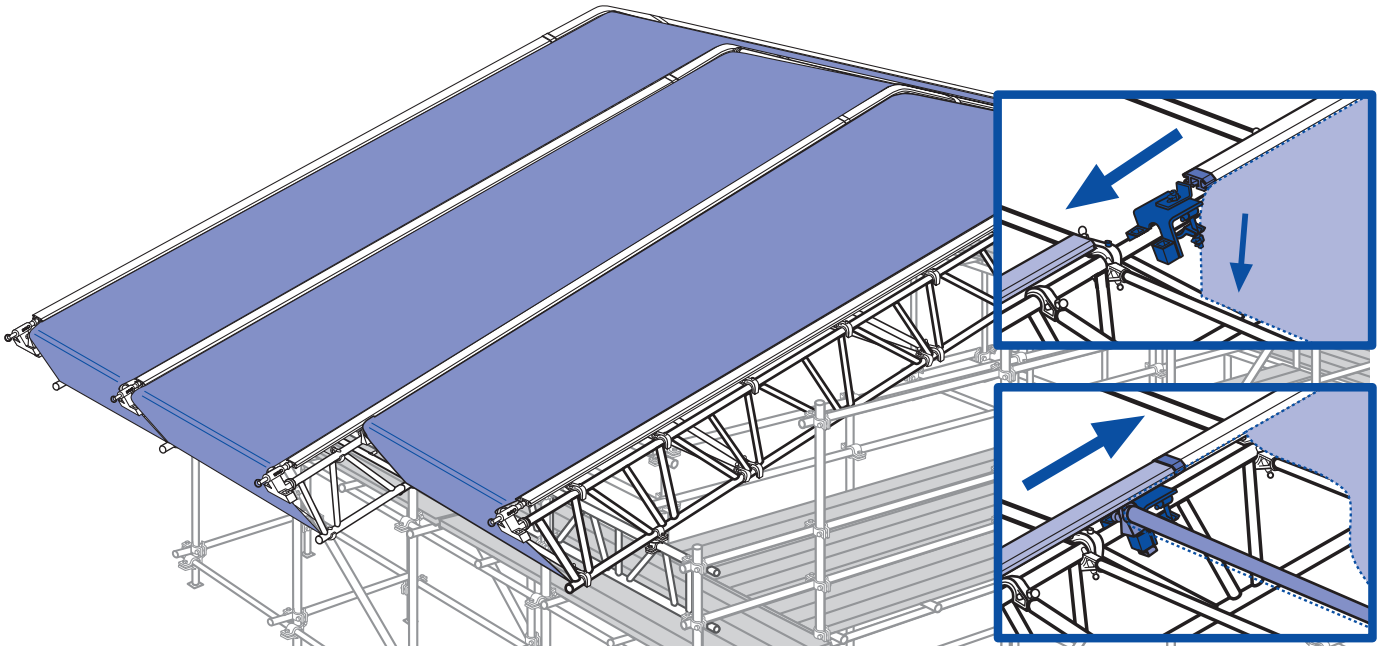
Return the sheeting around the roller brace and over the bracing frames.





16. Staggered Bays

Using the intermediate roller brace coupler, adjoining sheets can be terminated at different points. Arrange the tracking sections so that a joint corresponds to the required termination point, and pull the lower track section back slightly so that the sheet bead may be disengaged from the track bore and pulled down. (Remove the lower part of the shroud on the tracking spigot with a knife to facilitate this). Remove the L-shaped track stop from an intermediate roller brace coupler and fit the coupler under the track at the desired termination point. This will provide a housing for a roller brace and enable the sheet to be supported at the eaves.



17. Forming Openings in Completed Roofs

Plan openings in advance, as it will be necessary to position an infill (non-braced) bay in the correct location, and to fit infill horizontal braces upside down on the top chord (see drawing on page 13)

If it is desired to open a pre-planned bay, ensure that weather conditions are appropriate for handling the released sheet. Release the sheet tensioners on each side and, working from an appropriate platform, pull the sheet back over the roof to open the desired area, securing the sheet in the open position. Ascend the beam and remove the horizontal braces in the open area.The roof should be re-closed at the end of each shift or before the onset of unfavourable weather, using the methods described in the erection guidance above.

18. Rainwater Management

Ask ASP for guidance, as methods will vary according to the application.

19. Inspection

Inspect all work done. Ensure that structural and weatherproofing requirements have been satisfied.

20. Maintenance

Check all welded joints for cracks and examine tubular members for bends, kinks and dents. Consult ASP for advice if in doubt.

Lubricate claw pins with WD40 or similar, **avoid grease**.

It is strongly recommended, to ensure longevity of the sheets, that they are cleaned after use, neatly leaf folded and inserted into labelled storage bags.

NOTES